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Product Information

SAMSUNG
ELECTRONICS

DATE : 20. Apr. 2011

SAMSUNG TFT-LCD

MODEL : **LTA550HJ12**

The Information Described in this Specification is Preliminary and can be changed without prior notice

LCD Business

Samsung Electronics Co . , LTD.

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	1 / 27

Contents

Samsung Secret

| MODEL | LTA550HJ12 | Doc. No | 06-000-G-20110420 | Page | 2 / 27 |

Revision History

Date	Rev. No	Page	Summary
20. Apr. 2011	000	all	First issued

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	3 / 27

General Description

Description

LTA550HJ12 is a color active matrix liquid crystal display (LCD) that uses amorphous silicon TFT (Thin Film Transistor) as switching components. This model is composed of a TFT LCD panel, a driver circuit and a back light unit.

The resolution of a 55.0" is 1920 x 1080 and this model can display up to 16.7 Million colors with wide viewing angle of 89° or higher in all directions. This panel is intended to support applications to provide a excellent performance for Flat Panel Display such as Home-alone Multimedia TFT-LCD TV and High Definition TV.

Features

- RoHS compliance (Pb-free)
- High contrast ratio & aperture ratio with wide color gamut
- SPVA(Super Patterned Vertical Align) mode
- Wide viewing angle (± 178°)
- High speed response
- FHD resolution (16:9)
- Low Power consumption
- Edge Type LED (Light Emitted Diode) BLU
- DE (Data Enable) mode
- 4ch LVDS (Low Voltage Differential Signaling) interface (4pixel/clock)

General Information

Items	Specification	Unit	Note
Module Size	1247.6(H_{TYP}) x 719.9 (V_{TYP})	mm	± 1.0mm
	30.9 (D_{MAX})		
Weight	14,000 (Max.)	g	
Pixel Pitch	0.63(H) x 0.63(V)	mm	
Active Display Area	1209.6(H) x 680.4(V)	mm	
Surface Treatment	Antiglare, Hard-coating(3H)	-	
Display Colors	8bit – 16.7M	Colors	
Number of Pixels	1920 x 1080	Pixel	
Pixel Arrangement	RGB vertical stripe	-	
Display Mode	Normally Black	-	
Luminance of White	400 (Typ.)	cd/m²	

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	4 / 27

1. Absolute Maximum Ratings

If the condition exceeds maximum ratings, it can cause malfunction or unrecoverable damage to the device.

Item	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	V_{DD}	GND-0.5	16	V	(1)
Dimming Control	Max. Lum	-	5	V	
Storage temperature	T_{STG}	-20	60	℃	(2)
Operating temperature	T_{OPR}	0	50	℃	
Surface temperature	T_{SUR}	0	60	℃	(3)
Shock (non - operating)	X,Y,Z	-	50	G	(4)
Vibration (non - operating)	V_{NOP}	-	1.5	G	(5)

Note (1) Ta= 25 ± 2 ℃
   (2) Temperature and relative humidity range are shown in the figure below.
       a. 90 % RH Max. (Ta ≤ 39 ℃)
       b. Relative Humidity is 90% or less. (Ta > 39 ℃)
       c. No condensation
   (3) Although abnormal visual problems can be occurred in T_{SUR} range, the polarizer is not damaged in this range.
   (4) 11ms, sine wave, one time for ± X, ± Y, ± Z axis
   (5) 10-300 Hz, Sweep rate 10min, 30min for X,Y,Z axis

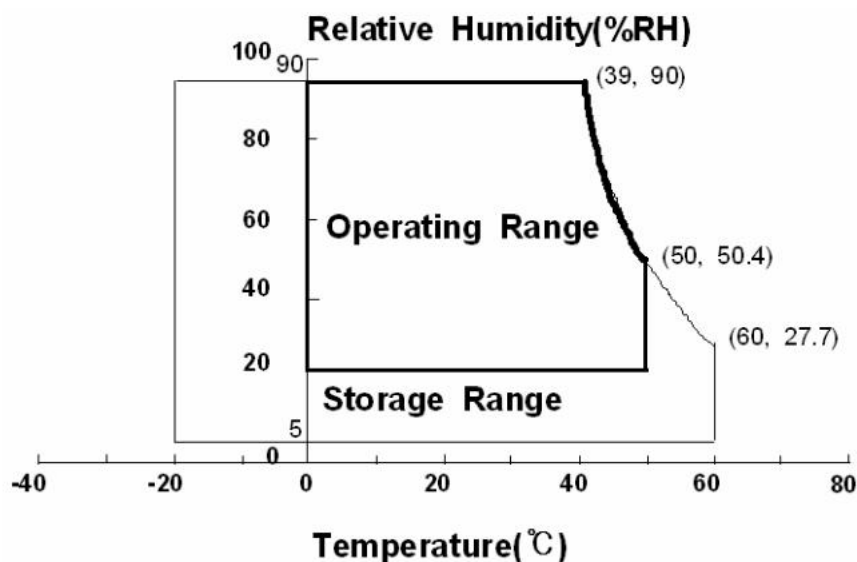### Relative Humidity(%RH)

Operating Range

(39, 90)

(50, 50.4)

(60, 27.7)

Storage Range

Temperature(℃)

Fig. Temperature and Relative humidity range

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	5 / 27

2. Optical Characteristics

The optical characteristics should be measured in a dark room or equivalent.
Measuring equipment : TOPCON RD-80S, TOPCON SR-3 ,ELDIM EZ-Contrast

(Ta = 25 ± 2℃, VDD=12.0V, fv=120Hz, f_{DCLK}=297.0MHz, Dimming = Max)

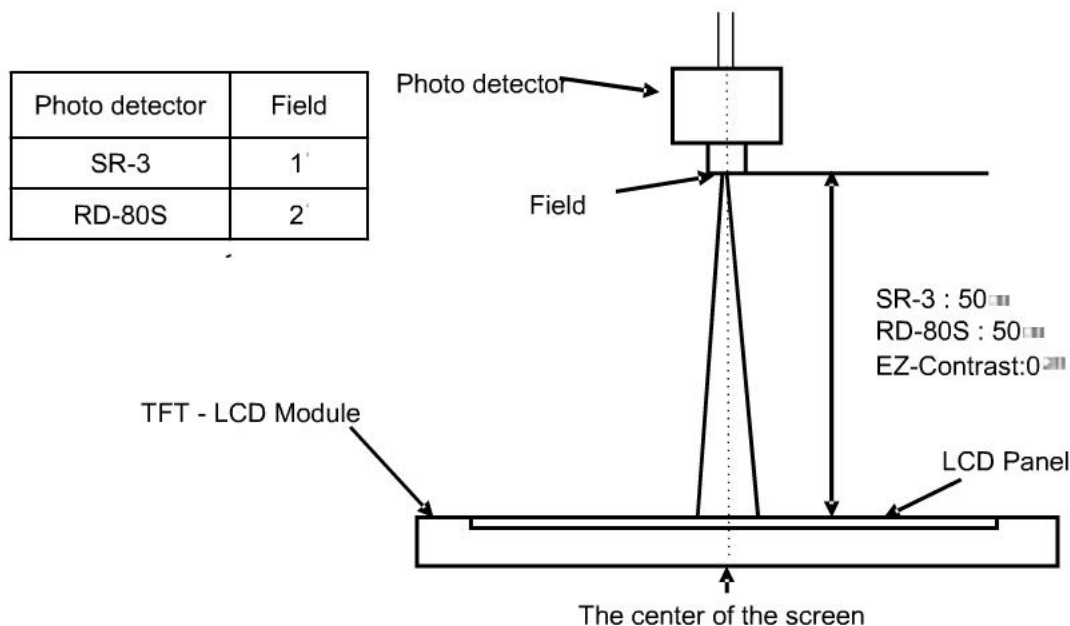| Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio (Center of screen)		C/R		3000	4000	-		(1) SR-3
Response Time	G-to-G	Tg		-	8	-	msec	(3) RD-80S
Luminance of White (Center of screen)		Y_L		300	400	-	cd/m²	(4) SR-3
Color Chromaticity (CIE 1931)	Red	Rx	Normal θL,R=0 θU,D=0 Viewing Angle	TYP. -0.03	0.647	TYP. +0.03		(5),(6) SR-3
		Ry			0.333			
	Green	Gx			0.311			
		Gy			0.610			
	Blue	Bx			0.153			
		By			0.058			
	White	Wx			0.280			
		Wy			0.290			
Color Gamut		-		-	72	-	%	(5) SR-3
Color Temperature		-		-	10,000	-	K	
Viewing Angle	Hor.	$θ_L$	C/R≧10	75	89	-	Degree	(6) EZ-Contrast
		$θ_R$		75	89	-		
	Ver.	$θ_U$		75	89	-		
		$θ_D$		75	89	-		
Brightness Uniformity (9 Points)		B_{uni}		-	-	25	%	(2) SR-3

- Test Equipment Setup

The measurement should be executed in a stable, windless and dark room between 40min and 60min after lighting the back light at the given temperature for stabilization of the back light. This should be measured in the center of screen.
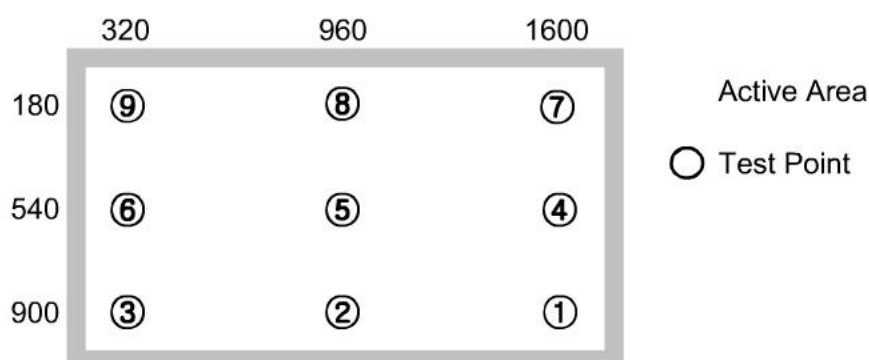
Environment condition : Ta = 25 ± 2 ℃

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	6 / 27

Samsung Secret

Photo detector	Field
SR-3	1˙
RD-80S	2˙

Photo detector

Field

SR-3 : 50㎝
RD-80S : 50㎝
EZ-Contrast:0㎝

TFT - LCD Module

LCD Panel

The center of the screen

- Definition of test point

	320	960	1600
180	⑨	⑧	⑦
540	⑥	⑤	④
900	③	②	①

Active Area

○ Test Point

Note (1) Definition of Contrast Ratio (C/R)
: Ratio of gray max (Gmax) & gray min (Gmin) at the center point ⑤ of the panel

$$C/R = \frac{G\max}{G\min}$$

Gmax : Luminance with all pixels white
Gmin : Luminance with all pixels black

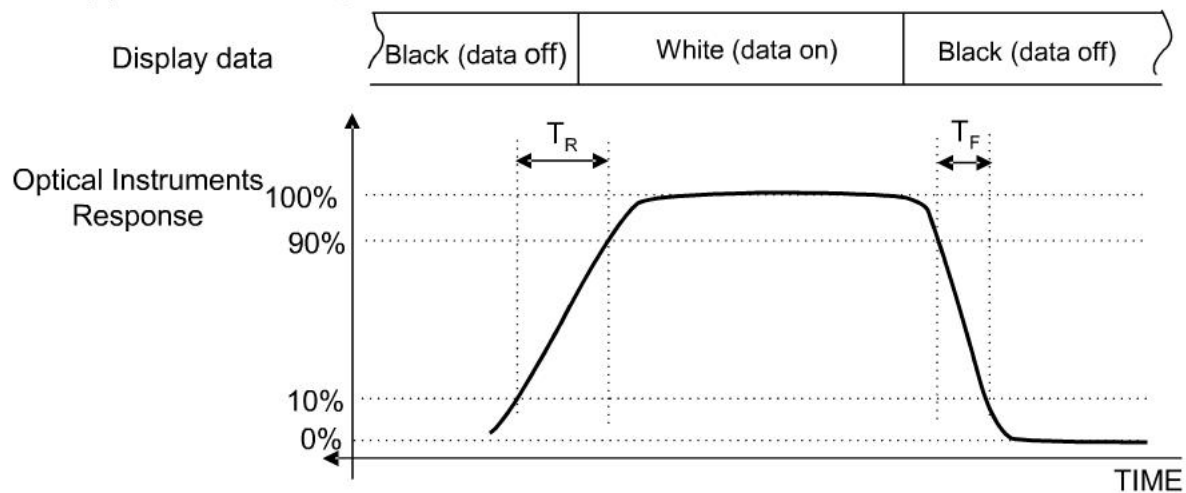| MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	7 / 27

Note (2) Definition of 9 points brightness uniformity (Test pattern : Full White)

$$Buni = 100 * \frac{(B\max - B\min)}{B\max}$$

Bmax : Maximum brightness
Bmin : Minimum brightness

Note (3) Definition of Response time : Sum of Tr, Tf

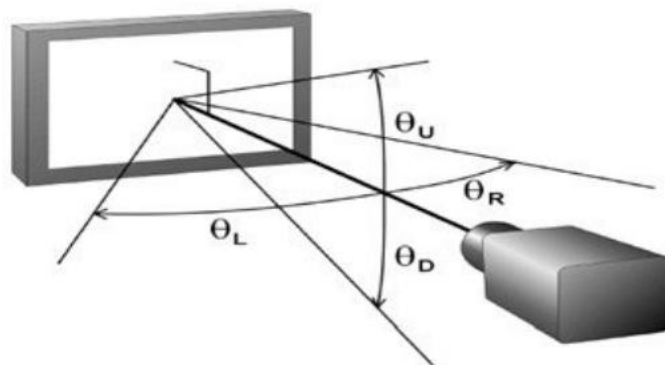* G- to- G : Average response time between Gray to Gray (Scale)

Note (4) Definition of Luminance of White : Luminance of white at center point ⑤

Note (5) Definition of Color Chromaticity (CIE 1931)
Color coordinate of Red, Green, Blue & White at center point ⑤

Note (6) Definition of Viewing Angle
: Viewing angle range (C/R ≥ 10)

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	8 / 27

3. Electrical Characteristics

3.1 TFT LCD Module
The connector for display data & timing signal should be connected.

$Ta = 25℃ \pm 2℃$

Item		Symbol	Min.	Typ.	Max.	Unit	Note
Voltage of Power Supply		V_{DD}	10.8	12.0	13.2	V	(1)
Current of Power Supply	(a) Black	I_{DD}	-	700	850	mA	(2),(3)
	(b) White		-	700	850	mA	
	(c) N-pattern		-	1450	1650	mA	
Vsync Frequency		f_V	95	120	125	Hz	
Hsync Frequency		f_H	120	135	140	kHz	
Main Frequency		Fdclk	260	297	305	MHz	
Rush Current		I_{RUSH}	-	-	6	A	(4)

Note (1) The ripple voltage should be controlled under 10% of V_{DD}.
(2) fv=120Hz, fDCLK=297.0MHz, V_{DD} = 12.0V, DC Current.
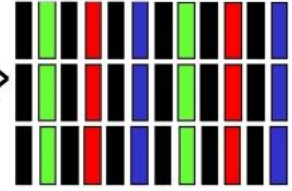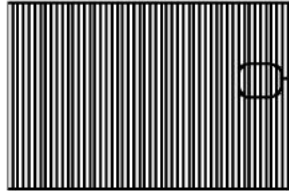(3) Power dissipation check pattern (LCD Module only)

a) Black Pattern　　b) White Pattern　　c) N-Pattern
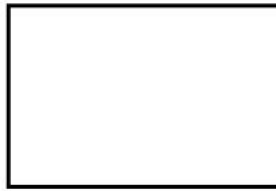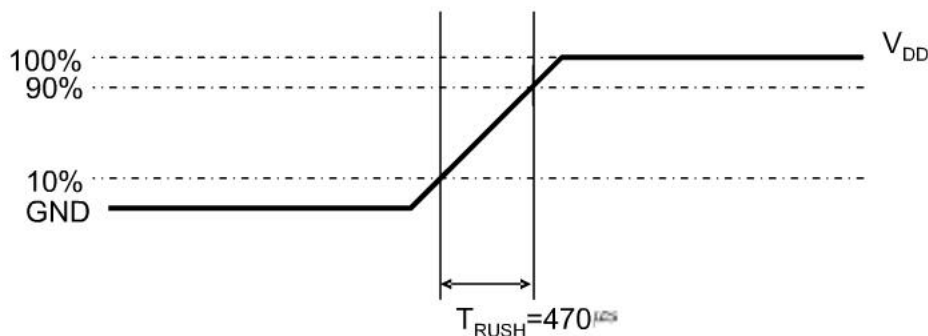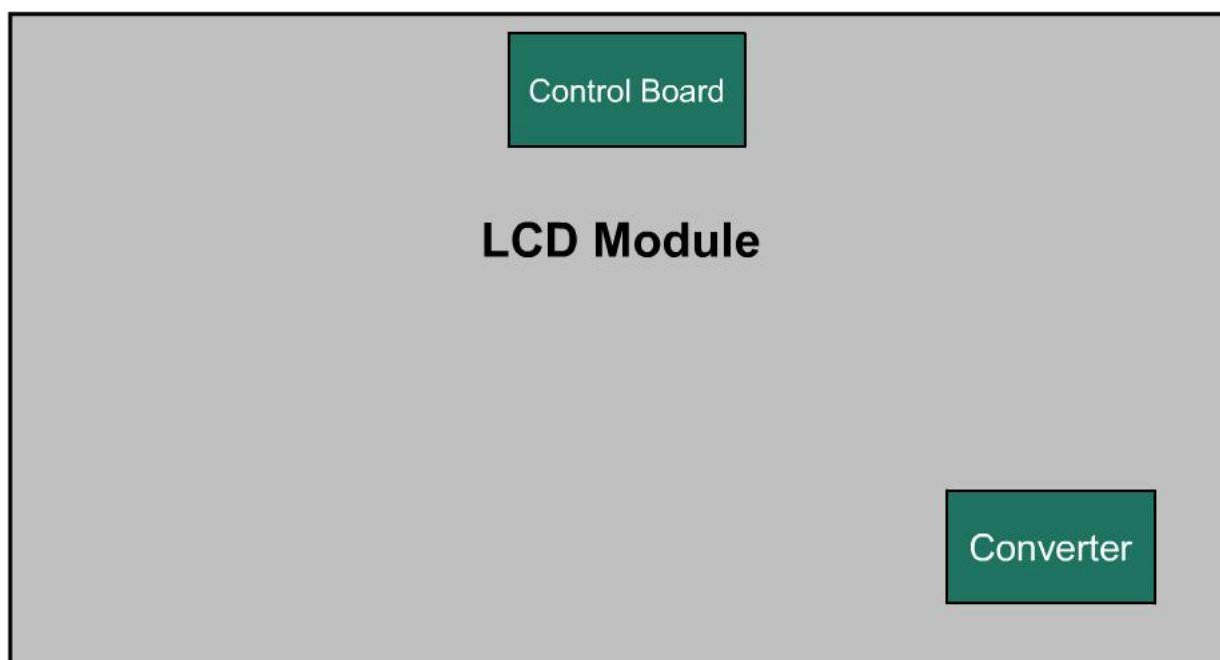
(4) Measurement Conditions

100%
90%　　　　　　　　　　　V_{DD}
10%
GND

$T_{RUSH}=470μs$

Rush Current I_{RUSH} can be measured when T_{RUSH} is 470μs.

3.2 Back Light Unit

The back light unit contains Edge type White LEDs (Light Emitting Diode)

Ta=25 ± 2℃

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Life Time	Hr	30,000	-	-	Hour	(1)

Note (1) It is defined as the time to take until the brightness reduces to 50% of its original

value.

[Operating condition : Ta = 25± 2℃, For single LED Bar only.]

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	10 / 27

3.3 Converter Input Condition & Specification

Samsung Secret

Items	Symbol	Conditions	Specifications Min.	Specifications Typ.	Specifications Max.	Unit	Note
Input Voltage	Vin	-	22	24	26	V	Ta=25± 2 ℃
Input Current	I$_{RUSH}$	Vin=24.0V Vdim =3.3V	-	-	4.8	A	2D Mode
			-	-	7.5	A	3D Mode
Output Current	I$_{O,MAX}$	Vin = 24.0V V dim =3.3 V	-	140	-	mArms	2D Mode
			-	230	-	mArms	3D Mode
Backlight On/Off	ON	Vin=24.0 V	2.4	-	5.5	V	
	OFF	Vin=24.0 V	0	-	0.8		
Dimming Range	V$_{DIM}$	Vin :22~26V	0	-	3.3	V	
Dimming Frequency	F$_{PWM}$	Vin=24.0 V	-	150	-	Hz	
External Dimming Duty Range	EX_Dim	Min	1	-	100	%	
External Dimming Frequency Range	F$_{EX\_PWM}$	Vin=22.0~26.0 V	120	-	180	Hz	Dim Pin(#13) : Floating
External Dimming Signal Level	V$_{PWM}$	High (ON)	2.4	-	5.5	V	
		Low (Off)	0	-	0.8		

Note) Power Consumption is measured when 400 [cd/m] of luminance which is the typical luminance.

(1) All data is measured after 120min warm-up.

- Additional Appendix for Supply Current & Power consumption

ITEM	SYMBOL	CONDITION	SPECIFICATION MIN	SPECIFICATION TYP	SPECIFICATION MAX	UNIT	NOTE
Input Current	Iovershoot, 2D	Vin=24V, dim=max	-	4.0	4.1	Adc	Maximum current after turn-on
	Isaturation,2D		-	3.9	4.0	Adc	Saturation current after 1hr aging
	Iovershoot,3D		-	1.05	1.08	Adc	Maximum current after turn-on
	Isaturation,3D		-	1.02	1.05	Adc	Saturation current after 1hr aging

4. Input Terminal Pin Assignment

4.1.1 Input Signal & Power

Connector : FI-RE41S-HF (JAE/UJU)

Pin	Description		Pin	Symbol	Description
1	Vdd(12V)		21		Rx1[3]P
2	Vdd(12V)		22		No Connection
3	Vdd(12V)		23		No Connection
4	Vdd(12V)		24		GND
5	Vdd(12V)		25		Rx3[0]N
6	No Connection		26		Rx3[0]P
7	GND		27		Rx3[1]N
8	GND		28		Rx3[1]P
9	GND		29	ODD LVDS SIGNAL	Rx3[2]N
10		Rx1[0]N	30		Rx3[2]P
11		Rx1[0]P	31		GND
12		Rx1[1]N	32		Rx3CLK-
13		Rx1[1]P	33		Rx3CLK+
14		Rx1[2]N	34		GND
15	ODD LVDS SIGNAL	Rx1[2]P	35		Rx3[3]N
16		GND	36		Rx3[3]P
17		Rx1CLK-	37		No Connection
18		Rx1CLK+	38		No Connection
19		GND	39		GND
20		Rx1[3]N	40		No Connection
			41		No Connection

Note) No Connection: This PINS are only used for SAMSUNG internal using.

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	12 / 27

4.1.2 Input Signal & Power

Connector : FI-RE51S-HF (JAE/UJU)

Pin	Description		Pin	Description	
1	Vdd(12V)		26		Rx4[0]P
2	Vdd(12V)		27		Rx4[1]N
3	Vdd(12V)		28		Rx4[1]P
4	Vdd(12V)		29		Rx4[2]N
5	Vdd(12V)		30		Rx4[2]P
6	No Connection		31		GND
7	GND		32	EVEN LVDS SIGNAL	Rx4CLK-
8	GND		33		Rx4CLK+
9	GND		34		GND
10		Rx2[0]N	35		Rx4[3]N
11		Rx2[0]P	36		Rx4[3]P
12		Rx2[1]N	37		No Connection
13		Rx2[1]P	38		No Connection
14		Rx2[2]N	39	GND	
15		Rx2[2]P	40	No Connection	
16		GND	41	No Connection	
17	EVEN LVDS SIGNAL	Rx2CLK-	42	3D_EM	3D_EN signal (Note 2)
18		Rx2CLK+	43	No Connection	
19		GND	44	No Connection	
20		Rx2[3]N	45	No Connection	
21		Rx2[3]P	46	No Connection	
22		No Connection	47	No Connection	
23		No Connection	48	3D_SYNC_I	Shutter glass Sync Input signal (Note 3)
24		GND	49	3D_SYNC_O	Shutter glass Sync Signal
25		Rx4[0]N	50	No Connection	
			51	No Connection	

Note (1) No Connection: These PINS are used only for SAMSUNG. (DO NOT CONNECT)
Note (2) 3D Enable signal voltage level
　　　High : Min 2.7V, Max 3.3V　　Low : Min 0 V, Max 0.4V

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	13 / 27

Samsung Secret

Note3) Recommend timing for 3D_SYNC_I Signal .

- Guide Signal to Separate L frame and R frame
- Shutter glass signal & Operation timing also depend on this signal
- To operate 3D function, need this signal from Set A/D board.
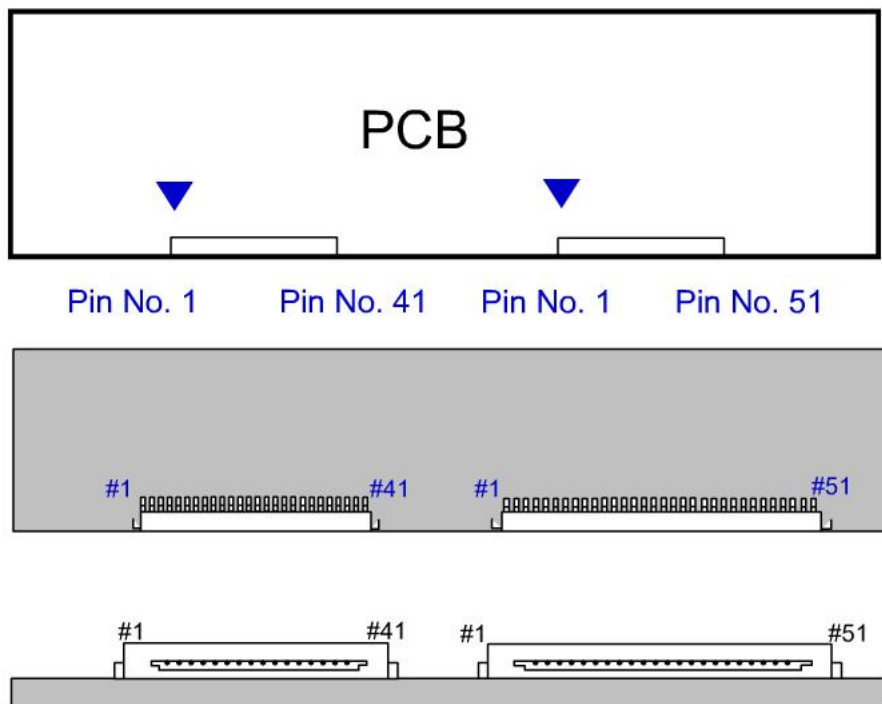 (In Order for using it in 2D mode, change the input condition into GND)

120hz Frame
Sequence input

| 'L' frame | 'R' frame | 'L' frame | 'R' frame |

3D_SYNC_I

5ms   5ms

3.3V

GND
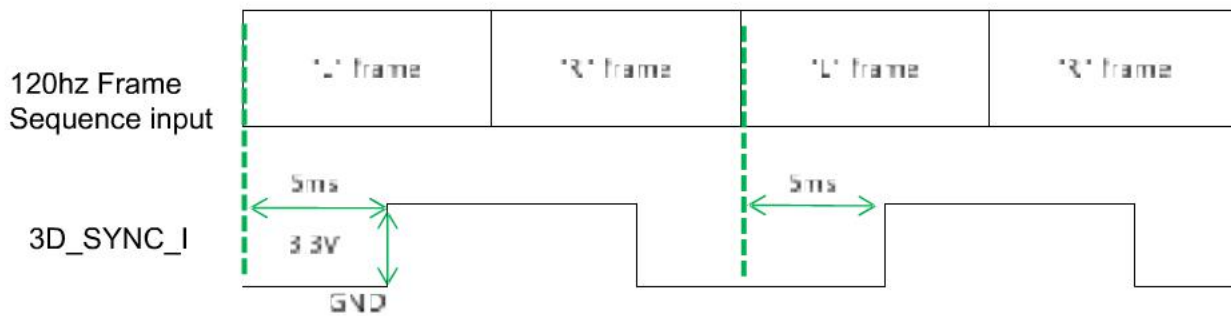
Note4) Pin number starts from Left side

PCB

Pin No. 1   Pin No. 41   Pin No. 1   Pin No. 51

#1   #41   #1   #51

#1   #41   #1   #51

Fig. Connector diagram

a. All GND pins should be connected together and also be connected to the LCD's
   metal chassis.
b. All power input pins should be connected together.
c. All NC pins should be separated from other signal or power.

| MODEL | LTA550HJ12 | Doc. No | 06-000-G-20110420 | Page | 14 / 27 |

4.2 Converter Input Pin Configuration

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Connector : Yeon-ho, 20022WR-14B1

Pin No.	Pin Configuration (FUNCTION)
	Master
1	24 V
2	24 V
3	24 V
4	24 V
5	24 V
6	GND
7	GND
8	GND
9	GND
10	GND
11	No Connection
12	Backlight On /Off [ON:2.4 – 5.5 V, OFF: 0 - 0.8 V]
13	Dimming Control [0V:Min, 3.3V:Max] *Note(1)
14	External PWM [1~100%] *Note(1)

Note(1) If use Dimming Control, Pin 14 Must be N.C
If use External PWM, Pin 13 Must be N.C

4.3. Inverter Input Power Sequence

Vin (24V)

0.02sec [Min]

Dimming Control

External PWM

0.02sec [Min]   0.2sec [Min]

Backlight On/Off

0.5sec [Min]

0sec [Min]   0 sec [Min]
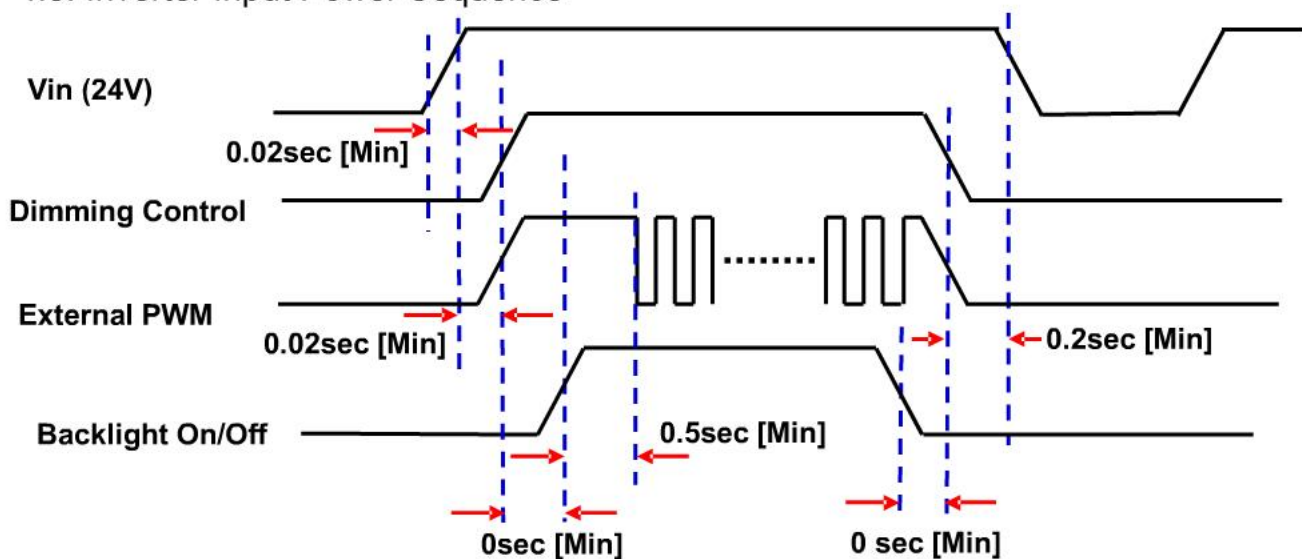
Note)   SEQUENCE :   On = Vin(24V) > Internal or External PWN ≧ Backlight On/off
OFF = Backlight On/Off ≧ Internal or External PWN > Vin(24V)

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	15 / 27

4.4 LVDS Interface
   - LVDS Receiver : T-con (merged)
   - Data Format (JEIDA Only)

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	LVDS pin	JEIDA -DATA
TxOUT/RxIN0	TxIN/RxOUT0	R2
	TxIN/RxOUT1	R3
	TxIN/RxOUT2	R4
	TxIN/RxOUT3	R5
	TxIN/RxOUT4	R6
	TxIN/RxOUT6	R7
	TxIN/RxOUT7	G2
TxOUT/RxIN1	TxIN/RxOUT8	G3
	TxIN/RxOUT9	G4
	TxIN/RxOUT12	G5
	TxIN/RxOUT13	G6
	TxIN/RxOUT14	G7
	TxIN/RxOUT15	B2
	TxIN/RxOUT18	B3
TxOUT/RxIN2	TxIN/RxOUT19	B4
	TxIN/RxOUT20	B5
	TxIN/RxOUT21	B6
	TxIN/RxOUT22	B7
	TxIN/RxOUT24	HSYNC
	TxIN/RxOUT25	VSYNC
	TxIN/RxOUT26	DEN
TxOUT/RxIN3	TxIN/RxOUT27	R0
	TxIN/RxOUT5	R1
	TxIN/RxOUT10	G0
	TxIN/RxOUT11	G1
	TxIN/RxOUT16	B0
	TxIN/RxOUT17	B1
	TxIN/RxOUT23	RESERVED

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	16 / 27

4.5 Input Signals, Basic Display Colors and Gray Scale of Each Color

COLOR	DISPLAY (8bit)	RED R0	R1	R2	R3	R4	R5	R6	R7	GREEN G0	G1	G2	G3	G4	G5	G6	G7	BLUE B0	B1	B2	B3	B4	B5	B6	B7	GRAY SCALE LEVEL
BASIC COLOR	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	BLUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	-
	GREEN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	-
	CYAN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-
	RED	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	MAGENTA	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	-
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	-
	WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-
GRAY SCALE OF RED	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R0
	DARK ↑	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R1
		0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R2
		:	:	:	:	:	:			:	:	:	:	:				:	:	:	:	:	:			R3~ R252
		:	:	:	:	:	:			:	:	:	:	:				:	:	:	:	:	:			
	LIGHT ↓	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R253
		0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R254
	RED	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	R255
GRAY SCALE OF GREEN	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G0
	DARK ↑	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G1
		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	G2
		:	:	:	:	:	:			:	:	:	:	:				:	:	:	:	:	:			G3~ G252
		:	:	:	:	:	:			:	:	:	:	:				:	:	:	:	:	:			
	LIGHT ↓	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	G253
		0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	G254
	GREEN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	G255
GRAY SCALE OF BLUE	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	B0
	DARK ↑	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	B1
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	B2
		:	:	:	:	:	:			:	:	:	:	:				:	:	:	:	:	:			B3~ B252
		:	:	:	:	:	:			:	:	:	:	:				:	:	:	:	:	:			
	LIGHT ↓	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	B253
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	B254
	BLUE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	B255

Note) Definition of Gray :
Rn : Red Gray, Gn : Green Gray, Bn : Blue Gray (n = Gray level)
Input Signal : 0 = Low level voltage, 1 = High level voltage

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	17 / 27

5. Interface Timing

5.1 Timing Parameters (DE mode)

SIGNAL	ITEM	SYMBOL	MIN.	TYP.	MAX.	Unit	NOTE
Clock	Frequency	$1/T_C$	260	297	305	MHz	-
Hsync	Frequency	F_H	120	135	140	KHz	-
Vsync		F_V	95	120	305	Hz	-
Vertical Display Term	Active Display Period	T_{VD}	-	1080	-	Lines	-
	Vertical Total	T_V	1092	1125	1350	Lines	-
Horizontal Display Term	Active Display Period	T_{HD}	-	1920	-	Clocks	-
	Horizontal Total	T_H	2092	2200	2348	clocks	-

Note) This product is DE mode. But the Hsync & Vsync signal must be inputted.
    (1) Test Point : TTL control signal and CLK at LVDS Tx input terminal in system
    (2) Internal V_{DD} = 3.3V

5.2 Spread Spectrum

- Modulation rate (max) : ± 1.5 %

- Modulation Frequency : under 100 KHz

5.3 LVDS Input Data Characteristics

ITEM		SYMBOL	Min.	Typ.	Max.	UNIT	NOTE
Input Data Position	F_{IN}=85MHz	t_{RSRM}	-	-	400	ps	
	F_{IN}=78MHz		-	-	450	ps	
	F_{IN}=75MHz		-	-	500	ps	-
Input Data Position	F_{IN}=85MHz	t_{RSLM}	-400	-	-	ps	
	F_{IN}=78MHz		-450	-	-	ps	
	F_{IN}=75MHz		-500	-	-	ps	
Input common mode voltage		V_{CM}	0.3	-	1.8	V	-
Differential Input Voltage		$|V_{ID}|$	200	350	600	mV	-

Note) When the skew is measured the Spread Spectrum should be 0%

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	18 / 27

5.4 Timing diagrams of interface signal (DE mode)

| MODEL | LTA550HJ12 | Doc. No | 06-000-G-20110420 | Page | 19 / 27 |
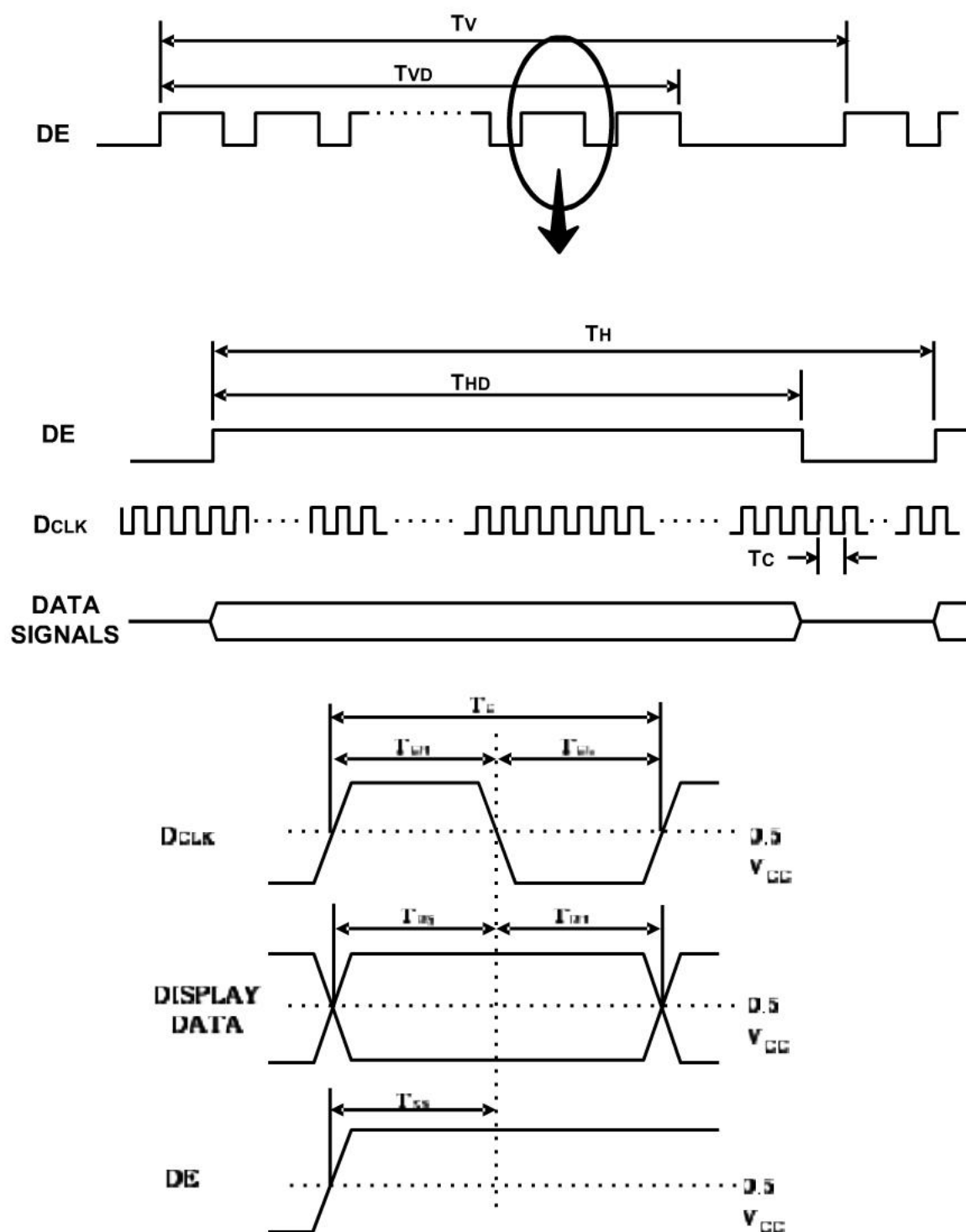
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5.5 Power ON/OFF Sequence

To prevent a latch-up or DC operation of the LCD Module, the power on/off sequence should be as the diagram below.

$0.5 < T1 \leq 10$ msec
$1 < T2 \leq 50$ msec
$0 < T3 \leq 50$ msec
$1,000$ msec $\leq T4$
$1,000$ msec $\leq T5$
100 msec $\leq T6$ (Recommend Value)
2000 msec $\leq T7$
100 msec $\leq T8$
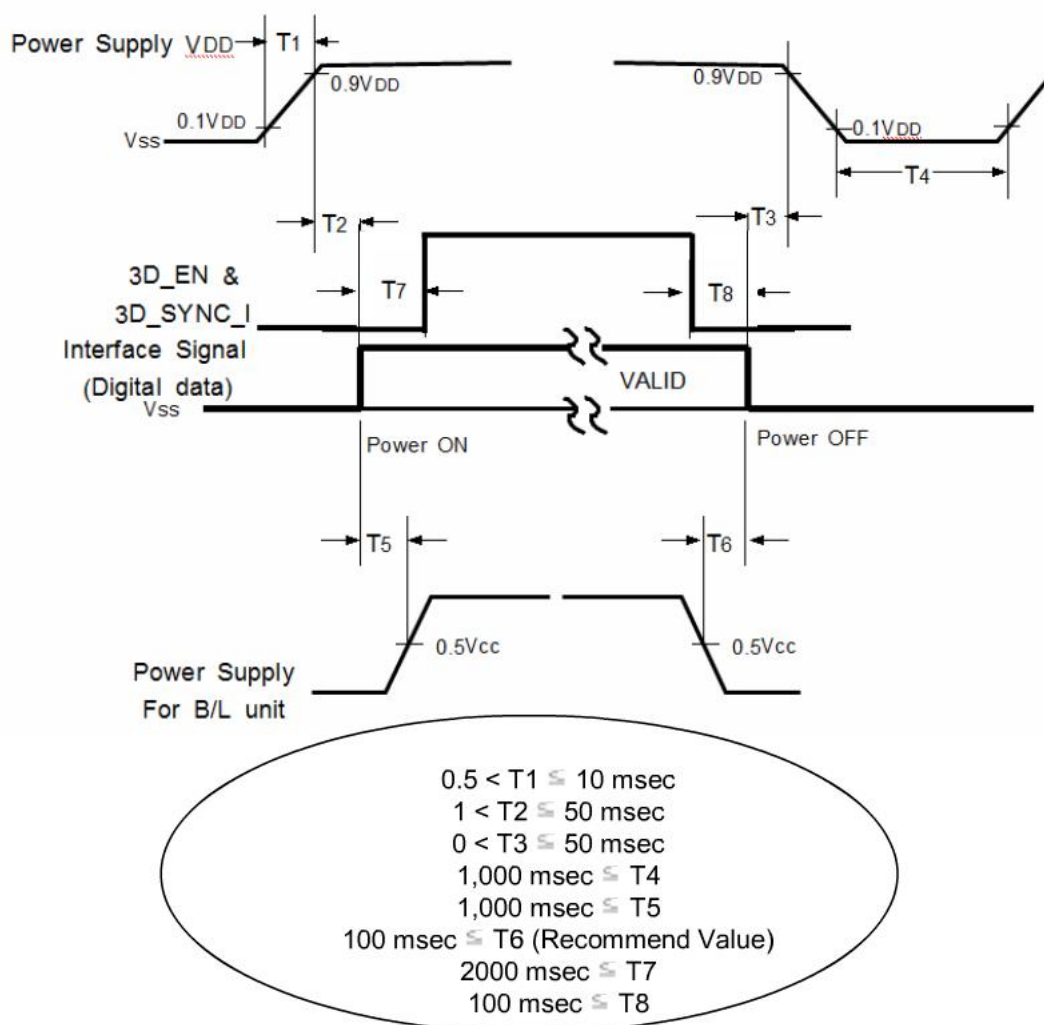
- The supply voltage of the external system for the Module input should be the same as the definition of V_{DD}.
- Apply the LED voltage within the LCD operation range. When the back light turns on before the LCD operation or the LCD turns off before the back light turns off, the display may momentarily show abnormal screen.
- In case of V_{DD} = off level, please keep the level of input signals low or keep a high impedance.
- T4 should be measured after the Module has been fully discharged between power off and on period.
- Interface signal should not be kept at high impedance when the power is on.

| MODEL | LTA550HJ12 | Doc. No | 06-000-G-20110420 | Page | 20 / 27 |

SECTION AA'

- NOTE
1. BACKLIGHT : WLED
2. CONNECTOR SPECIFICATION
   - CONTROL INPUT CONNECTOR
     - MAKER : YEONHO
     - PART NO : 20022WR-%01
   - CONVERTER INPUT CONNECTOR
     - MAKER : YEONHO
     - PART NO : 20037WR-15
   - SYNC CABLE CONNECTOR
     - MAKER : HIROSE
     - PART NO : DH30-6P-1.25H
   - SYNC CABLE CONNECTOR
     - MAKER : YEONHO
     - PART NO : 1.25WR-04
3. USERHOLE
   - TAP SIZE & TOLERANCE DESIGNED FOR GENERAL PURPOSE METRIC
     SCREW THREAD ACCORDING TO GENERAL GRADE OF KS B 0211
   - ALLOWED SCREW TORQUE
     - M3 TAP : 6.0 kgf·cm MAX
     - M4 TAP : 13.0 kgf·cm MAX
     - M8 TAP : 14.0 kgf·cm MAX
   - (SCREW) REPEATED INSERTION WARRANTY : 5TIMES
4. GAP BETWEEN TOP CHASSIS AND GLASS IS 12mm(MAX)
5. WEIGHT : 12.500g(MAX)
6. BLACK MATRIX SPEC

PRELIMINARY

GENERAL TOLERANCE			
STEP	LEVEL 1	LEVEL 2	LEVEL 3
0 < X < 6	±0.05	±0.1	±0.2
6 < X < 16	±0.08	±0.15	±0.3
16 < X < 64	±0.12	±0.25	±0.5
64 < X < 256	±0.25	±0.4	±0.8

SAMSUNG ELECTRONICS

MODEL NAME	LTA550HJ12-C
PART/SHEET NAME	OUTLINE DIM (FRONT)
CODE NO	-

SCALE 1/1

NO	PART NAME	CODE NO	SPECIFICATION	QTY	SPEC NO	REMARK
	OUTLINE DIMENSION	-	LTA550HJ12-C	1		
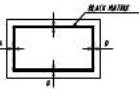
PRELIMINARY

| GENERAL TOLERANCE				REV	DATE	DESCRIPTION OF REVISION		REASON	CHG'D BY			
STEP	LEVEL 1	LEVEL 2	LEVEL 3	UNIT	mm	DRAWN BY	CK'D BY	CHG'D BY	APP'D BY	MODEL NAME	LTA550HJ12-C	
0 < X < 6	±0.5	±0.1	±0.2	SCALE	1/1	ELLIE						
6 < X < 16	±0.8	±0.15	±0.3	TOLERANCE		ELLIE		PART/SHEET NAME	OUTLINE DIM (BACK)	SHT1	2/
16 < X < 64	±0.12	±0.25	±0.5	SAMSUNG ELECTRONICS				SPEC NO		CODE NO	-	VER	001
64 < X < 256	±0.25	±0.4	±0.8										

7. PACKING

7.1 CARTON (Internal Package)

(1) Packing Form
    Corrugated fiberboard box and corrugated cardboard as shock absorber
(2) Packing Method

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Packing Box

Pallet Plastic
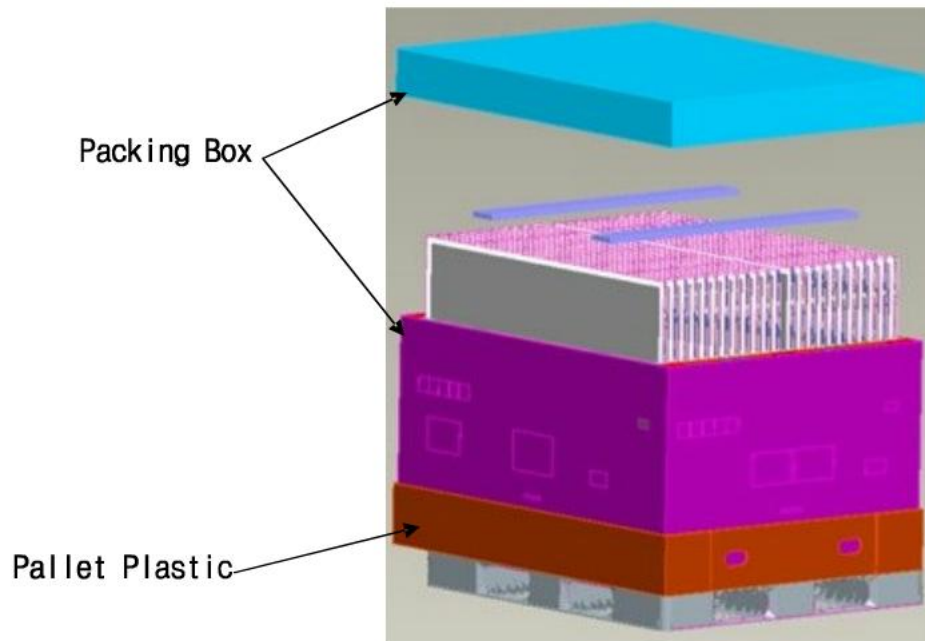
7.2 Packing Specification

Item	Specification	Remark
LCD Packing	23ea / Box (Packing-Pallet Box)	1. 299.0 Kg / LCD (23ea) 2. 28.5 Kg / Packing Box (1set) > Packing Box Material : KLB, AK, CK
Pallet	1Box / Pallet	1. Pallet weight = 9.3 kg > Pallet Material : HDPE
Packing Direction	Vertical	
Total Pallet Size	H x V x height	1150mm(H) x 1470mm(V) x 907mm(height)
Total Pallet Weight	336.8 kg	Pallet(9.3kg) + Module(299.0kg) + Packing BOX(28.5kg)

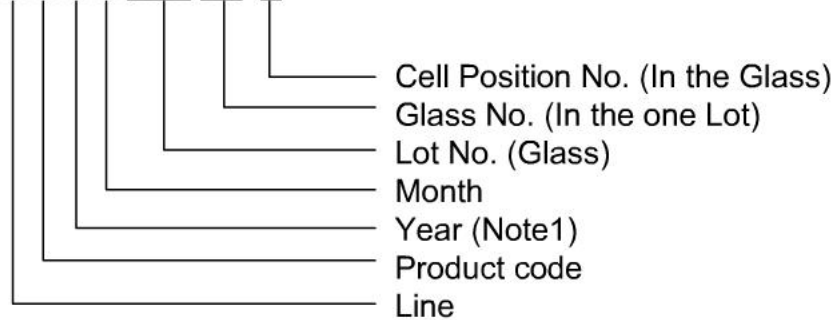| MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	23 / 27

8. MARKING & OTHERS

A nameplate bearing followed by is affixed to a shipped product at the specified location on each product.

(1) Part number : LTA550HJ12
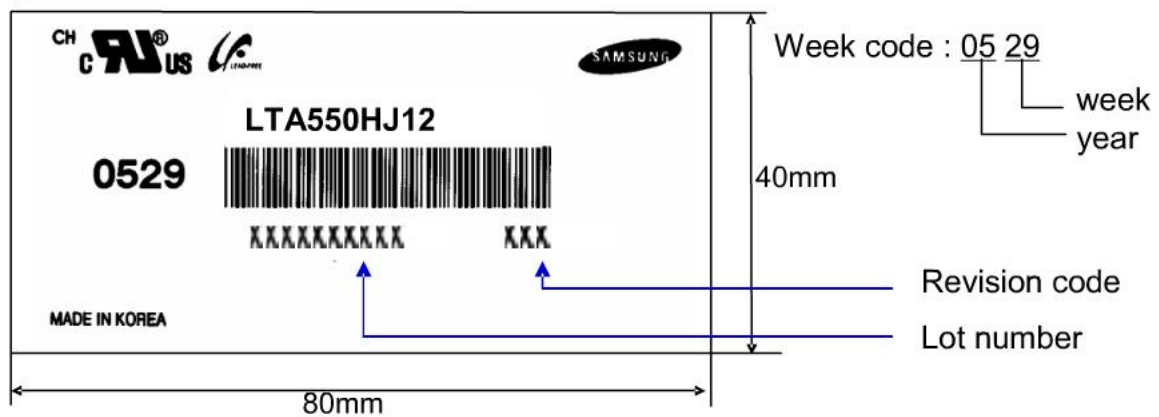(2) Revision: Three letters
(3) Lot number : X X X X XXX XX X

- Cell Position No. (In the Glass)
- Glass No. (In the one Lot)
- Lot No. (Glass)
- Month
- Year (Note1)
- Product code
- Line

(4) Nameplate Indication

LTA550HJ12

0529

XXXXXXXXXX   XXX

MADE IN KOREA

80mm

40mm

Week code : 05 29
- week
- year

Revision code

Lot number

(5) Packing box attach

DVC : LTA550HJ12

TYPE: XXXX

QTY : 23

XXXXXXXXXX   G1

165mm

100mm

Part number

Box serial number
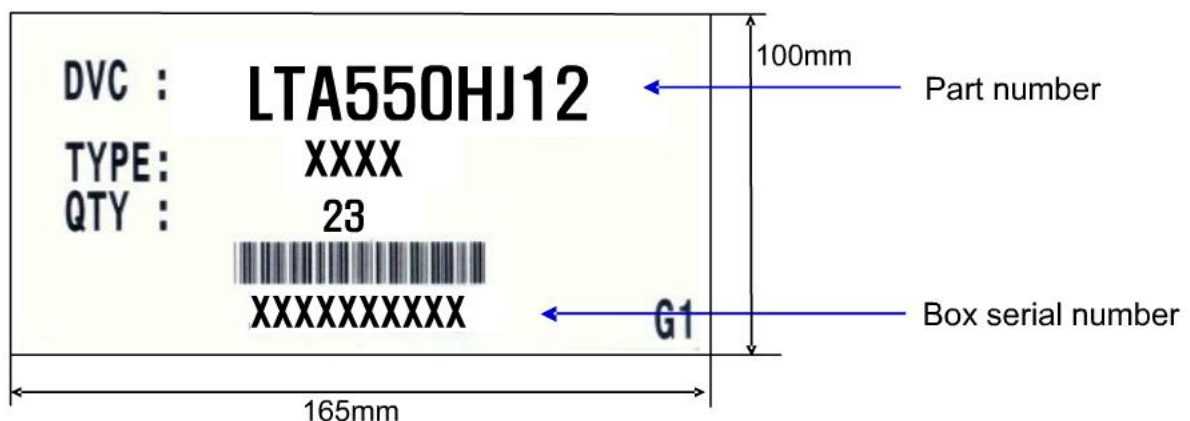
(6) Others
  1. After service part
     Lamps cannot be replaced because of the narrow bezel structure.

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	24 / 27

9. General Precautions

9.1 Handling

(a) When the Module is assembled, it should be attached to the system firmly using all mounting holes. Be careful not to twist and bend the Module.

(b) Because the inverter use high voltage, it should be disconnected from power before it is assembled or disassembled.

(c) Refrain from strong mechanical shock and / or any force to the Module. In addition to damage, this may cause improper operation or damage to the Module and CCFL back light.

(d) Note that polarizers are very fragile and could be damage easily. Do not press or scratch the surface harder than a HB pencil lead.

(e) Wipe off water droplets or oil immediately. If you leave the droplets for a long time, staining or discoloration may occur.

(f) If the surface of the polarizer is dirty, clean it using absorbent cotton or soft cloth.

(g) Desirable cleaners are water, IPA (Isopropyl Alcohol) or Hexane. Do not use ketone type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanent damage to the polarizer due to chemical reaction.

(h) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth . In case of contact with hands, legs or clothes, it must be washed away with soap thoroughly.

(i) Protect the module from Electrostatic discharge. Otherwise the ASIC IC or Semiconductor would be damaged.

(j) Use finger-stalls with soft gloves in order to keep display clean during the incoming inspection and assembly process.

(k) Do not disassemble the Module.

(l) Do not disassemble shield case of inverter & LVDS board.

(m) Do not connect N.C pins. (Samsung internal use only)

(n) Protection film for polarizer on the Module should be slowly peeled off just before use so that the electrostatic charge can be minimized. Must put on antistatic glove while handle a module

(o) Pins of I/F connector should not be touched directly with bare hands.

| MODEL | LTA550HJ12 | Doc. No | 06-000-G-20110420 | Page | 25 / 27 |

9.2 Storage

(a) Do not leave the Module in high temperature, and high humidity for a long time.
It is highly recommended to store the Module with temperature from 5 to 40℃
and relative humidity of less than 70%.

(b) Do not store the TFT-LCD Module in direct sunlight.

(c) The Module should be stored in a dark place. It is prohibited to apply sunlight or
fluorescent light in storing.

(d) Storage period is recommended not to excess 1 year.

9.3 Operation

(a) Do not connect or disconnect the Module in the "Power On" condition.

(b) Power supply should always be turned on/off by the "Power on/off sequence"

(c) Module has high frequency circuits. Sufficient suppression to the electromagnetic
interference should be done by system manufacturers. Grounding and shielding methods
may be important to minimize the interference.

(d) The cable between the back light connector and its inverter power supply should
be connected directly with a minimized length. A longer cable between
the back light and the inverter may cause lower luminance of LED and
may require higher startup voltage (Vs).

9.4 Operation Condition Guide

(a) The LCD product should be operated under normal conditions.
Normal condition is defined as below;
- Temperature : 20± 15℃
- Humidity : 55± 20%
- Display pattern : continually changing pattern (Not stationary)

(b) If the product will be used in extreme conditions such as high temperature,
humidity, display patterns or operation time etc.., It is strongly recommended
to contact SEC for Application engineering advice. Otherwise, its reliability and
function may not be guaranteed. Extreme conditions are commonly found at
Airports, Transit Stations, Banks, Stock market, and Controlling systems.

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	26 / 27

9.5 Others

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(a) Ultra-violet ray filter is necessary for outdoor operation.

(b) Avoid condensation of water. It may result in improper operation or disconnection of electrode.

(c) Do not exceed the absolute maximum rating value. (supply voltage variation, input voltage variation, variation in part contents and environmental temperature, and so on)
Otherwise the Module may be damaged.

(d) If the Module keeps displaying the same pattern for a long period of time, the image may be "sticked " to the screen.
To avoid image sticking, it is recommended to use a screen saver.

(e) This Module has its circuitry PCB's on the rear side and should be handled carefully in order not to be stressed.

(f) Please contact SEC in advance when you display the same pattern for a long time.

MODEL	LTA550HJ12	Doc. No	06-000-G-20110420	Page	27 / 27